

# Getting started with the CAN module

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# Controller Area Network (CAN) protocol basics

- Asynchronous serial protocol. No clock signal is transmitted with data.
- No concept of Master and Slave nodes.
- Multi-Master network. Any node can transmit to
  - any other node (or)
  - a group of similarly configured nodes (or)
  - all nodes in the network.
- Message acceptance is based on automatic filtering of message identifiers.
- Bus contention is resolved through non-destructive bit-wise arbitration.

# Typical CAN bus implementation

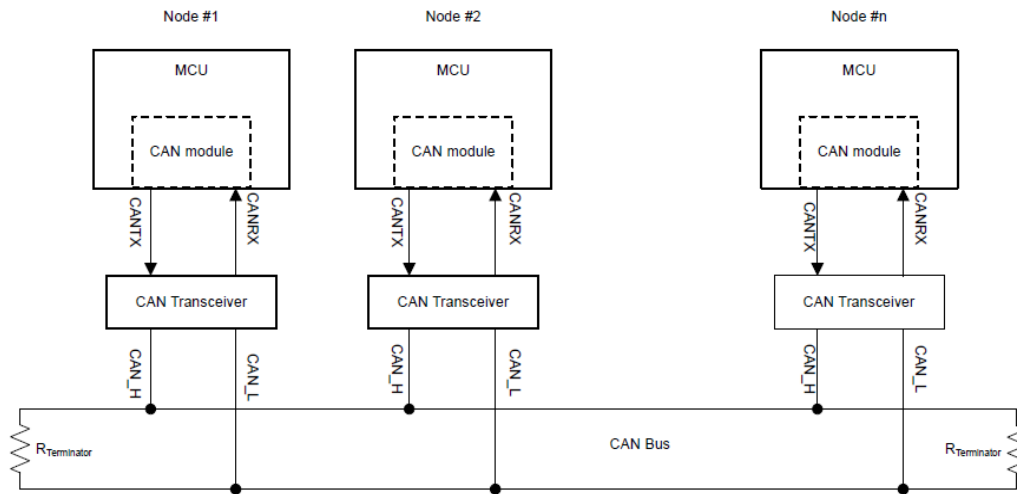
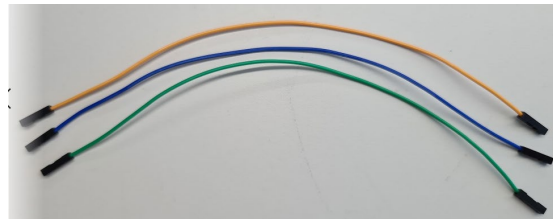
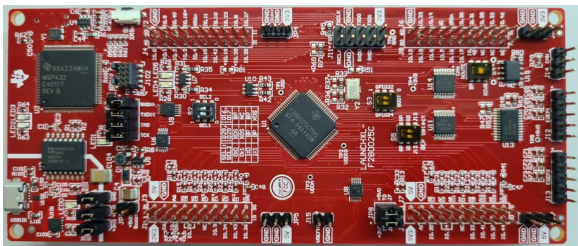


Figure 1-1. Typical CAN bus

- There must be at least one other node on the network for a node to complete transmission of a frame.
- This is because the acknowledge bit (ACK) must be transmitted from a separate node to confirm that it correctly received a frame.
- The nodes must also have the same baud rate to communicate.

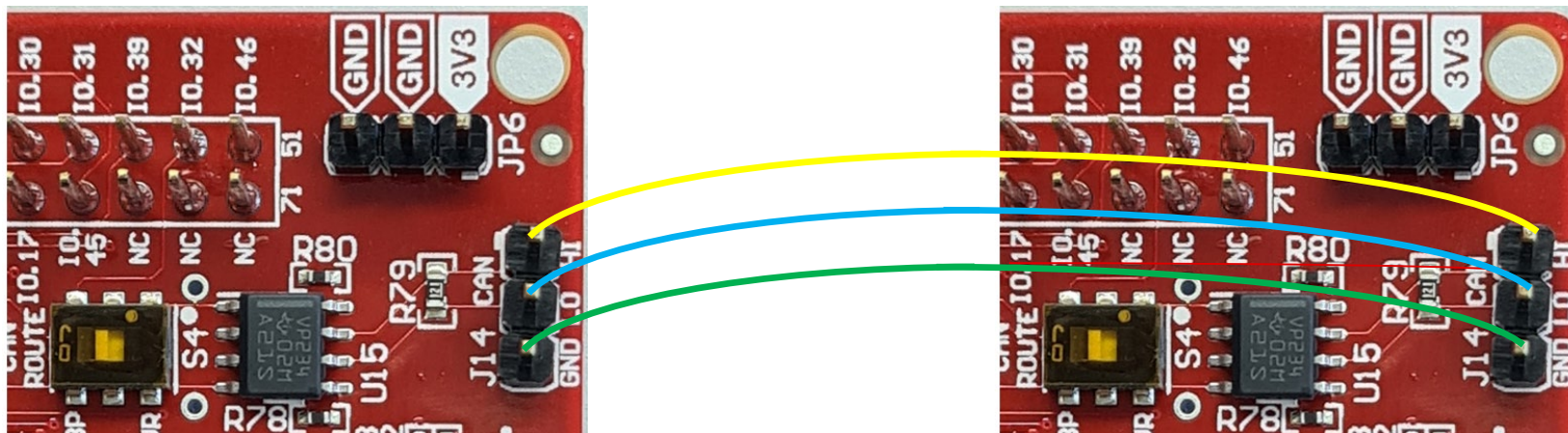
# Hardware needed for CAN communication

- **Transmitter:** LaunchPad™ is an ideal platform because of its low cost and the fact that it already contains a CAN transceiver.
- **Receiver:** The receiver can be another LaunchPad™ or a CAN bus analyzer.
- **Computer** with the following software installed:
  - Code Composer Studio™ (CCS) IDE.
  - C2000Ware.
  - If a CAN bus analysis tool is used, the associated GUI.
- **Jumper wires** – 3



# Connecting two LaunchPads together

- Connect CAN\_H, CAN\_L and GND of the two LaunchPADs together.

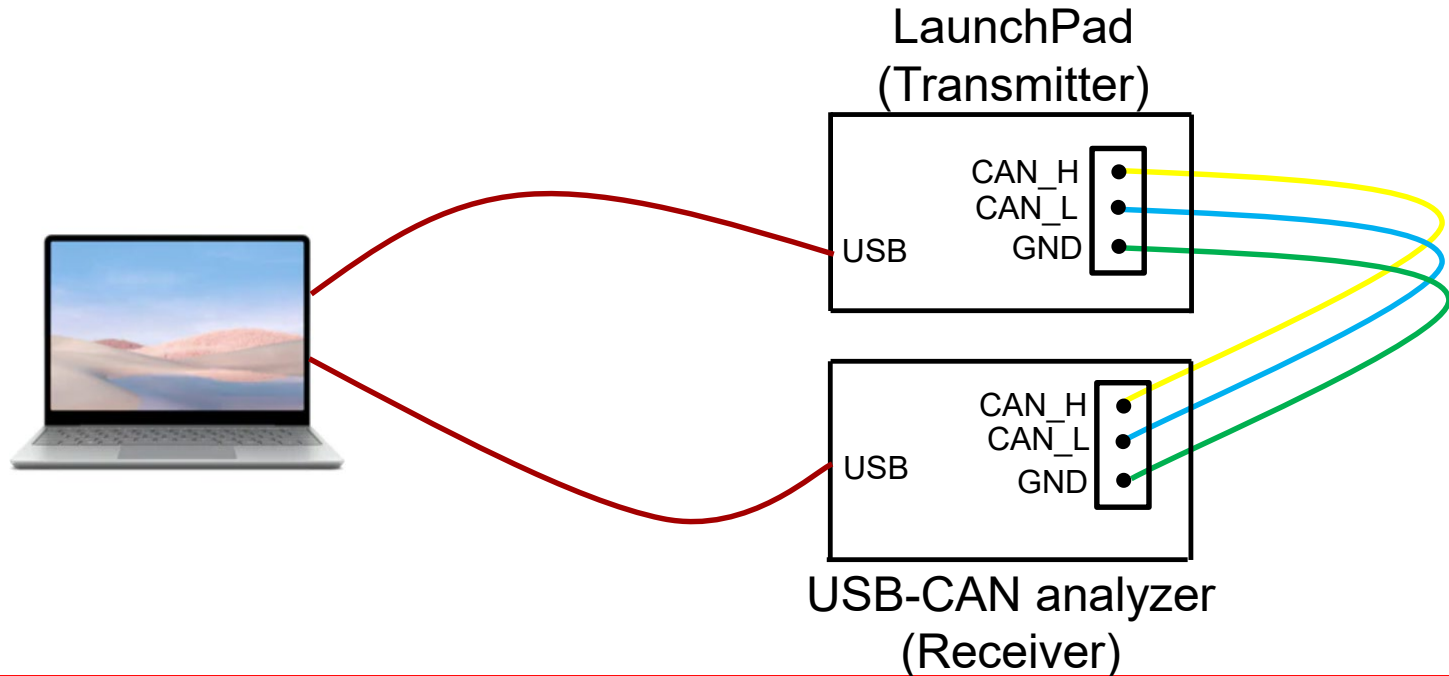


LaunchPad  
(Transmitter)

LaunchPad  
(Receiver)

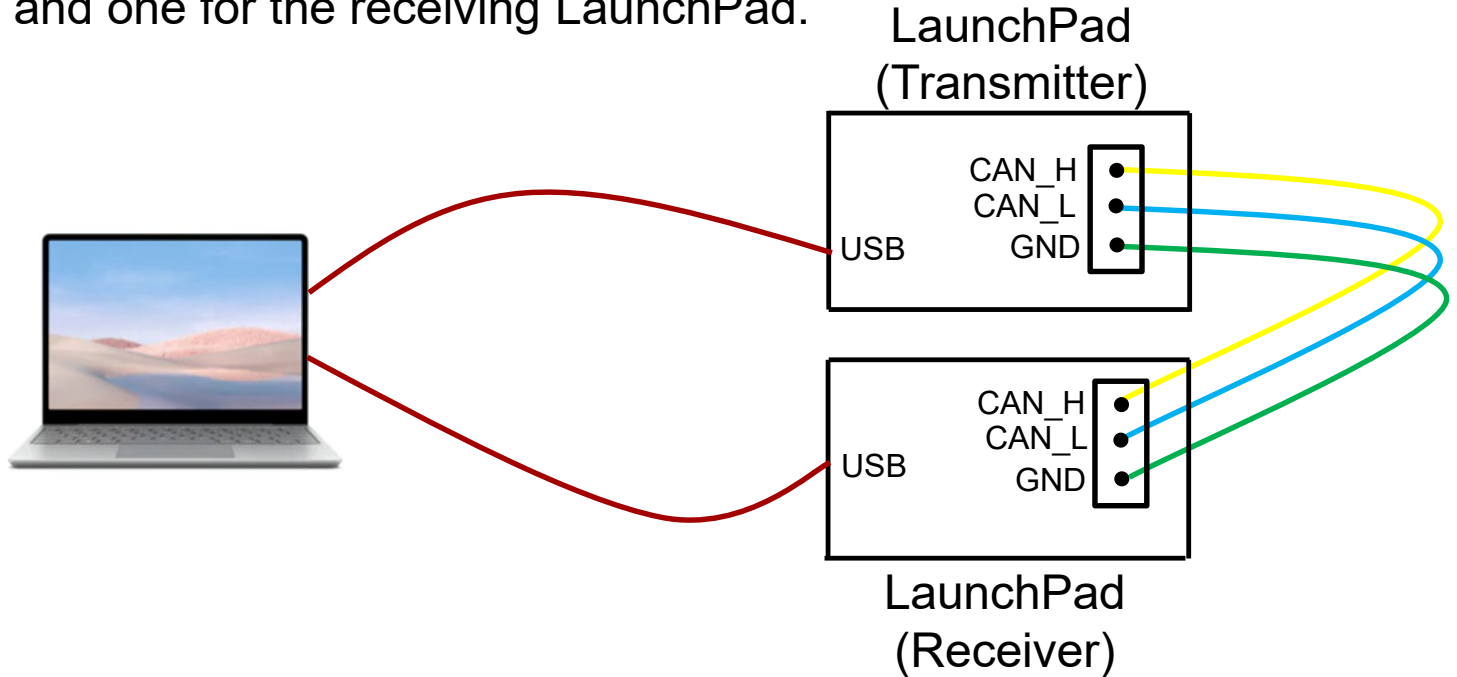
# Experiment setup – Option #1

The transmitting LaunchPad is connected to the computer running CCS. For the receiver, a CAN bus analyzer is used, instead of a LaunchPad.



## Experiment setup – Option #2

Both LaunchPads are connected to the same computer. In this configuration, two instances of CCS should be running in the computer, one for the transmitting LaunchPad and one for the receiving LaunchPad.



# CAN Resources

- CAN Training Module [C2000 Academy](#)
- [TI Precision Labs CAN overview](#)
- CAN Application Reports
  - [Programming Examples and Debug Strategies for the DCAN module](#)
  - [Configurable Error Generator for Controller Area Network](#)
  - [Calculator for CAN Bit Timing Parameters](#)